The Cornell Countryman

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I Am That I Am

By

L. H. Bailey

I lie on my back on the shingle shore
Subdued by the wind and the pebbly roar:
I see the white clouds in their domes of air
And the specks of birds that are floating there:
And the earth is small and the sky is large—
I forget the sense of my time and charge:
I am lost in awe of the Great Program—
Only this I know: I know that I Am.

The wild earth it is swinging afree from its place.
It is rolling adrift on the limitless space.
It is sailing away past cerulean bars.
It is passing the moon and the sun and the stars:—
And the wind and the wind it is following fast.
And the sunshine and shadow are scurrying past.
And white cloud-shafts are pointing with fingering streams
That are caught and are lost in the myths of my dreams.

Oh carry me out to the bold deep sky,
Oh blow me away through the blue,—
I will snatch the years as they hasten by
And scatter their days as the dew:
For the years and years are but shapes profound
That are bred in the depths sublime,
And that ride and ride in their fruitless round
On the perishing wings of Time.

Oh carry me out where the starlights burn,
Where the world-stuff billows and sweeps,—
I will grasp the orbs as they pass in turn
And fling them adrift on the deeps:
For the worlds and worlds may vanish as air,
And schemes of the universe fall,
Yet will I fly to some vast Otherwhere
And hold my domain Over All.

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MANAGEMENT OF THE FARMER'S WOODLOT.

By W. N. Hutt,

State Horticulturist of North Carolina.

I THINK it may safely be said that the farmer's woodlot or bush receives less care and attention than any other part of the farm. Indeed the woodlot is hardly considered as part of the farm at all. The attention it generally receives is the destructive blows of the axe in winter, and the no less harmful browsing of stock in summer. Under this treatment the wood is constantly decreasing in quantity and value, and the land lies as an unprofitable, stumpy waste, which is neither wood nor pasture, or is turned into cultivation, for which, being generally poor land, it is little fitted. Doubtless this unproductiveness of the woodlot is due to the fact that farmers generally do not consider the bush capable of any systematic management or regular cropping, or at all capable of repaying any labor expended upon it.

Farmers are apt to consider bush land as something to be cleared up, and not to be perpetuated, or as a gift of nature for our own special benefit, and one that cannot be renewed. The time it takes for a seedling tree to become of marketable value is not as long as is usually supposed. Of course, if we had to begin on a bare field to raise timber, it would be a somewhat different matter. But in the ordinary woodlot we find trees of 10, 20, 30, 50, or even of 70 or 100 years of growth.

Nature if left to herself will gradually change a scanty coppice into a forest of value, but at best her methods in forestry are slow and somewhat irregular. However, by careful thought and practical management, nature may be so assisted that the woodlot can be made to supply not only all present needs for fuel, but to give regular crops of merchantable timber, and to be year after year increasing in permanent value. Growing forest trees are very susceptible of management; the crooked may be made straight or the straight crooked, the spreading may be made close, or the close to spread.

While the prices of wheat and other farm products have been decreasing, and are likely to decrease still more, the price of lumber, owing to increasing scarcity, has been continually going up. We are painfully reminded of this fact if we wish to put up any building, however small. Any woods under careful handling may be made to produce regular, if not annual crops without the expenditure of a single dollar for replanting. With these few facts in mind, it is our intention to outline the practical management of a woodlot, such as we might find anywhere throughout the country, with a view to attaining its greatest present usefulness and permanent value.

Taking a sort of inventory of an ordinary woodlot we would find somewhat as follows: 1, more or less (generally less) of mature trees; 2, trees past maturity; 3, premature trees; 4, healthy growing trees; 5, coppice and seedlings; 6, stump land; 7, waste, i. e., with no wood on it whatever.

1. Mature trees are those which by reason of age have arrived at their greatest size and most valuable quality of timber, and are therefore ready for cutting.

2. Trees past maturity are those which have not been cut on becoming mature, have become dead at the top, and the rain getting down into them has destroyed the quality of the wood. Finally these trees become hollow, and though they may be annually laying on new wood underneath the bark, yet, owing to the action of insects and wood-destroying fungi, the rate of decay gradually exceeds the rate of growth, till some day the wind brings them down as useless old shells.

3. Premature trees are those which by reason of some accident of wind or storm have become broken and decayed, and, being thereby checked in growth, they never make valuable timber. A dead top and stunted

growth are generally indicative of the premature condition.

4. Healthy, growing trees are those which are to take the places of the mature trees as the latter are removed.

5. Coppice consists of the shoots that spring up from the stumps of trees that have been cut. The seedlings

WHITE PINE AND GRAY BIRCH.
The limber birches threaten serious damage to the pine and should be removed.
Reproduced by permission of the Forest Service, U. S. Dept. Agr.

are the tiny trees which have come up from the seed of mature trees.

Reproduction of Trees.

The first thing to be done with the woodlot is to get it all under crop. There should not be a square rod of it that is not producing trees. Land in a wheat field not producing wheat is waste land; land in a bush that is not raising trees is also waste land.

All trees reproduce themselves naturally from the seed and some also by coppice and under natural conditions the mature trees would seed the ground around them. In this way spaces would gradually become filled up with growing timber. If, however, stock is allowed to graze in the woodlot the seedlings and under growth are prevented from coming up, and all natural provision for the perpetuation of the forest is cut off. The rough pasture on the few open spaces in a woodlot is of very little value, while the harm done to the trees is very great.

Keep Out Stock.

One woodlot which I have had under observation gave a very clear proof this last year. In the spring, as growth started, around the mature trees could be seen coming up a fine crop of young seedlings. In a few weeks cattle and sheep were turned into the woods. In summer the pasture became very bare, and the stock browsed off the leaves of the little seedlings. Owing to excessive drought in the early fall the pasture was not renewed. The stock ate off not only the leaves, but also the green shoots of the trees and shrubs as high as they could reach. In the fall, when the stock was taken out of the woods, there was not a seedling to be seen, nor a leaf, nor a green shoot on the older trees within five or six feet of the ground. Under this treatment, year after year, this lot has produced no new trees, and the old trees being removed, it is becoming an unprofitable, stumpy waste. But by far the greater injury from stock results indirectly from the trampling of the soil and the consequent destruction of the natural mulch about the trees. On the vegetable mould of the forest floor depend largely the health and vigor of the trees. This mould, which is composed chiefly of decaying leaves and twigs, is of a very porous nature, and forms a natural reservoir for water. Under the shade of the tree tops the moisture of the vegetable mould is

WHITE PINE PLANTATION 30 YEARS OLD.

Spacing of trees a little too wide (7-8 feet). A closer spacing (6 feet) would reduce the size of the side branches and hasten natural pruning. The lower branches have been removed, but such pruning is useless unless extended up the tree for at least one log length.—*Reproduced by permission of the Forest Service, United States Department of Agriculture.*

given up slowly throughout the season, and the air about the trees is kept in that humid condition so favorable for plant growth. The downward movement of water through the forest mould is also slow, and as the water table gradually lowers, the roots of the trees push downward through the softened subsoil. For this reason forest trees under natural conditions are deep rooted, and are seldom blown down by high winds. Moreover by virtue of the slow movement of the water in the forest mould the springs of the woodland have a continuous, even flow throughout the year.

One of the most noticeable features of pastured woodlots is the absence of the natural forest mould. The sharp feet of stock cut up the soft turf and

pack it, so that its waterholding capacity is practically destroyed. For this reason creeks become in spring rushing torrents, roaring down hillsides and tearing away the fertile soil, and are dried-up, rocky gullies almost before summer comes. Rain falling upon pastured woods finds in the soil no natural reservoir, but passes quickly through the soil to swell for a few hours the creeks and is lost to the trees. When summer comes the soil of a pastured woods is hard and cracked like a bare fallow. The rain which fell upon it passed through it so quickly that the roots of the trees have been unable to follow down after the too-rapidly-receding water table. Deep root growth under such conditions is checked, and the trees are frequently blown over by strong winds. It is not an uncommon thing on closely-pastured woodlots to see sturdy oaks and maples, or even the tough-rooted elm, overturned by the wind.

After all stock is kept out, the older trees will seed the waste places, but as the sod has usually become very tough in most bushes, the seedlings have lessened chances of surviving. It has been found to be the cheapest and best method to break up the land where possible and seed it artificially, or plant it with trees.

Methods of Seeding and Planting.

When possible, a good way is to plow up the land and make a seed-bed in which the little trees are grown and tended until they are able to take care of themselves. Tree seeds are not produced annually, but generally every second year, and will not stand drying like other seeds. The nuts and seeds of broad leaf trees are best collected as soon as ripe and packed in moist earth till sown. Chestnuts will be injured in germinating power by drying even for twenty-four hours. The seeds of pines and other evergreen trees may be best kept by gathering the ripened cones in the fall and storing in a dry, cool place till ready for planting. When cultivating up the land and seeding is not practicable on account of stumps and rocky hillsides, trees may be transplanted from a nursery, or the young seedlings may be taken from the woods. By sowing the seeds in the nursery row and giving them garden cultivation, larger trees may be grown in a given time, but the tap root is cut off and they have a tendency to spread out into branches instead of growing long straight trunks. Nursery-bred trees when placed on poor soil and left to shift for themselves are usually overtaken by seedlings under natural conditions. The seedlings grown from nuts have very long tap roots and will not bear transplanting. Nuts and acorns should therefore be planted where the trees are to remain. A method I have found very handy in planting large seeds, such as nuts and acorns, is to punch a hole in the sod about four inches deep with a light crowbar, and to drop in the seed and cover it, pressing the earth in firmly with the heel. Plant nuts thickly, using not less than 10 or 12 per square rod. This will be at the rate of about one-half bushel per acre of shelled nuts. Seedling trees may often be found growing in great numbers under the shade of the mother trees. These may be removed in moist weather and put in with a dibble, where required, putting in not less than four trees per square rod. On lake beaches or drifting sandy wastes it is often next to impossible to get any useful species to grow. In cases of this kind some-quick-growing varieties such as poplar, willow or box elder are planted as nurse trees, and as soon as some humus is collected about them the seedlings of more desirable trees are planted under their protecting shade. After the useful species have become established the nurse trees may be cut for fuel and the more useful kinds come on and take possession of the soil. Many kinds of seedlings are very delicate and slow growing during their first few years of growth, and need to be shaded from the scorching rays of the sun. It is for this reason that the best seedlings are usually found in the moist shade of the mother tree. Weeds or any leafy plants will afford a useful shelter for the little trees, but, on

the other hand, if the weeds grow too rank they may shut out the sunlight and starve the little trees. It is well to go over the plantation with a scythe and cut away the weeds where they may be growing too thick and overtopping the young trees.

Kind of Trees to Plant.

The question arises, what kind of trees should we have in the woodlot? This will depend somewhat on the nature of the soil, but we should prefer to have those native species which have the highest market value. The soil of the woodlot is usually the poorest on the farm, and rightly so, for of all crops on poor land wood is that which will give the largest yield.

White Pine.

If the land is high and gravelly or sandy it might be stocked with white pine, which is "the king of all forest trees." However, pine is often found on land that is pretty stiff in texture, but its growth there would be slow.

Chestnut.

Chestnut is also suited to light and well-drained land, and has a high value for furniture, railway ties, posts, etc.

Elm.

Elm by virtue of its present demand for making furniture, baskets, bicycle rims, etc., is becoming a valuable timber, and it has the advantage that it is a rapid grower and will thrive well on almost any land, even where it is too wet for most trees to grow. It has been selling locally at $6.00 per 1,000 feet, or $9.00 per cord.

Hickory.

Hickory is a tree valuable for its nuts as well as for its timber. Some farmers living near Niagara Falls derive quite an important revenue from hickory nuts grown on their farms. Hickory is worth $12.00 to $15.00 per cord for making spokes and tool handles. The young trees come into value when not more than four or five inches in diameter, and the yearly thinnings from a woodlot have a considerable market value.

Basswood.

Basswood is a rapid grower, and is much used in making carriages, and in cabinet work. It is also a valuable honey tree.

Ash and Maple.

Ash and Maple are much used for interior house furnishing.

White Oak.

White oak is at present the fashionable wood for furniture.

Cedar.

The cedar can be grown in swamps and places too wet for any other tree, and few trees are more valuable.

Black Walnut.

Where it can be grown there is no more attractive or valuable tree than the black walnut. For use in making expensive furniture it rivals mahogany, and has been known to sell as high as $100 per 1,000 feet, rough.

Mixed Plantation.

Trees seem to do better in mixed plantations than when planted all of one kind, and there is the further advantage that by raising different varieties, almost double the number of trees can be grown per acre. Forest trees vary much in the amount of shade they bear. Some, like the beech, the sugar maple, or the spruce have a dense crown and are thickly leaved down the trunk, and in the interior of the crown. This shows that the leaves can exist and perform their work in a small amount of light; in other words, the beech, maples and spruce are shade-enduring trees. On the other hand, there are trees like the walnut, the chestnut, and the oak, which have scanty foliage, and do not have leaves inside of, or under the crown. This shows that their leaves cannot perform their functions in the shade. Such trees as these are light-needing trees. The shade-enduring varieties can thrive well under the diffused light of the light-needing trees. For this reason we may just double the number of trees per acre by combining the shade enduring and the light-needing trees, and the addition of the former will not be a detraction but a benefit to the latter. Under ordinary conditions young trees should stand so thickly that a man with an axe in his hand would be able to touch half a dozen trees in a circle about him.

IRREGULAR GROWTH OF WHITE PINE AND GRAY BIRCH
on abandoned pasture, showing nature's slow and unsatisfactory method of restocking.—*Reproduced by permission of the Forest Service, U. S. Dept. Agriculture.*

Trimming and Cutting.

As soon as the woodlot is entirely under crop, and of the desired varieties, the treatment will consist in taking out the weeds of the forest, or in other words, all trees of inferior varieties, and those that will not eventually make large, valubale timber, Such trees as hawthorn, ironwood, blue or water beech, are of dwarf, crooked habit, and never make much valuable timber, even for fuel. If there are promising young trees or more valuable varieties than would take the place of these, the inferior trees should be cut away. Such trees as red oak, yellow birch, willow, etc., though of larger habit than the last, could profitably give place to more valuable species. However, no tree should be cut unless there are young trees growing under its shade, which will in a few years fill up its place. The trees should stand so closely that no grass can grow under them. When the forest shade becomes so scanty that grass takes the place of the natural mould or humus covering, it may safely be said that the trees are not thick enough, and under such circumstances no thinning or cutting whatever should take place. If the forest cover is thick enough all premature trees should be cut. These may be of valuable sorts, but will never make timber of good size or quality. Other trees, again, are comparatively useless for timber because they have been started under open conditions, and the trunk is short, and branches into many limbs. These trees will never make much but fuel, and should as soon as possible give place to better trees.

Forcing Timber.

When the inferior trees are cut away and their places taken by straight, vigorous trees, the management of the woods consists in simply forcing on to maturity the remaining valuable trees. Where trees are grown very thickly there is a constant competition among them for each to stretch up to the light and overtop the others. This competition causes them

to grow very long, straight stems. The shade of the tops makes the lower and inside branches die, and drop off, and the trunks are thus rendered free of knots. By proper proportioning of the light-needing and shade-enduring trees the latter may be used in forcing the upward growth of the former, while the denser foliage of the shaders will be effective in denuding the other trees of side branches. The shade-enduring species do not suffer from the shade as the smaller, light-needing trees would under their mother trees, and so they are forming timber under what would be to the other kind of trees, impossible conditions.

Those trees which can overtop the others and get the most light will make the greatest growth, while the continual stretching up of the others will force the leaders, in maintaining their supremacy, to keep lengthening their trunks. This goes on until the limit of height for the variety of trees is reached. The tree will have a very long straight trunk, but will be of little value, as it has no great thickness. If the surrounding trees which have forced this tree up in height be removed, it will develop a spreading top, and direct its energies towards growth in thickness.

This is the life of a forest tree, and only when it has attained its proper height and developed a crown does it begin to make much wood. When the mature tree is cut out, those trees under it, which have suffered from its shade, at once begin to branch out and take up its place.

Practical forestry management simply consists in assisting the process of nature and sometimes even in forcing her hand to direct the growth and hasten the maturity of trees.

CARE OF THE FARM WOODLOT

By Alfred Akerman, M. F.

THE woodlot should receive a share of every farmer's attention. Like other parts of the farm, the woodlot yields returns in proportion to the attention which it receives. This attention may take the form of pruning or thinning or protection from fire.

1. Pruning.

There is only one forest tree in New England and the Middle States that it pays to prune, (and that is the white pine). Unlike most other trees, the white pine has a trick of holding its side branches long after they have died from side shading; and the only way to get a high percentage of clear lumber in the timber crop is to remove these side branches before a large knot has been formed.

It is a waste of time to prune trees that have reached a diameter of two, six or eight inches; for if they are larger than that, the knot has already been formed. It is also a waste of time to prune any trees that are not likely to become a part of the final crop. If a tree is so situated with reference to its neighbors that it will be suppressed before reaching maturity and will never be fit for anything but kindling wood or boxboards, it is evidently a mistake to bestow labor on it. Only the best and most promising trees in a stand should, therefore, be pruned.

In pruning, any number of dead branches may be removed without injury to the tree; but live branches should be taken sparingly. Start at the base of the tree and remove the dead branches up to where the live ones begin and include one or two whorls of live ones, but wait a few seasons before going further.

An axe is a good tool to do the work with. The cuts should be close to the trunk, so that the stubs will soon grow over. Care should be taken not to hack and bruise the bark of the trunk.

2. Thinning.

Thinning should be moderate. The German proverb, "A gentle force is

SAWING LUMBER ON THE CORNELL UNIVERSITY FARM, SPRING 1906

30,000 feet of Pine and 7,000 feet of Oak from 5 acres. The Pine is worth $30 a thousand; the Oak $50 a thousand. Total value $1250. The sawing, done by contract, cost $3.00 and $3.50 per thousand feet.

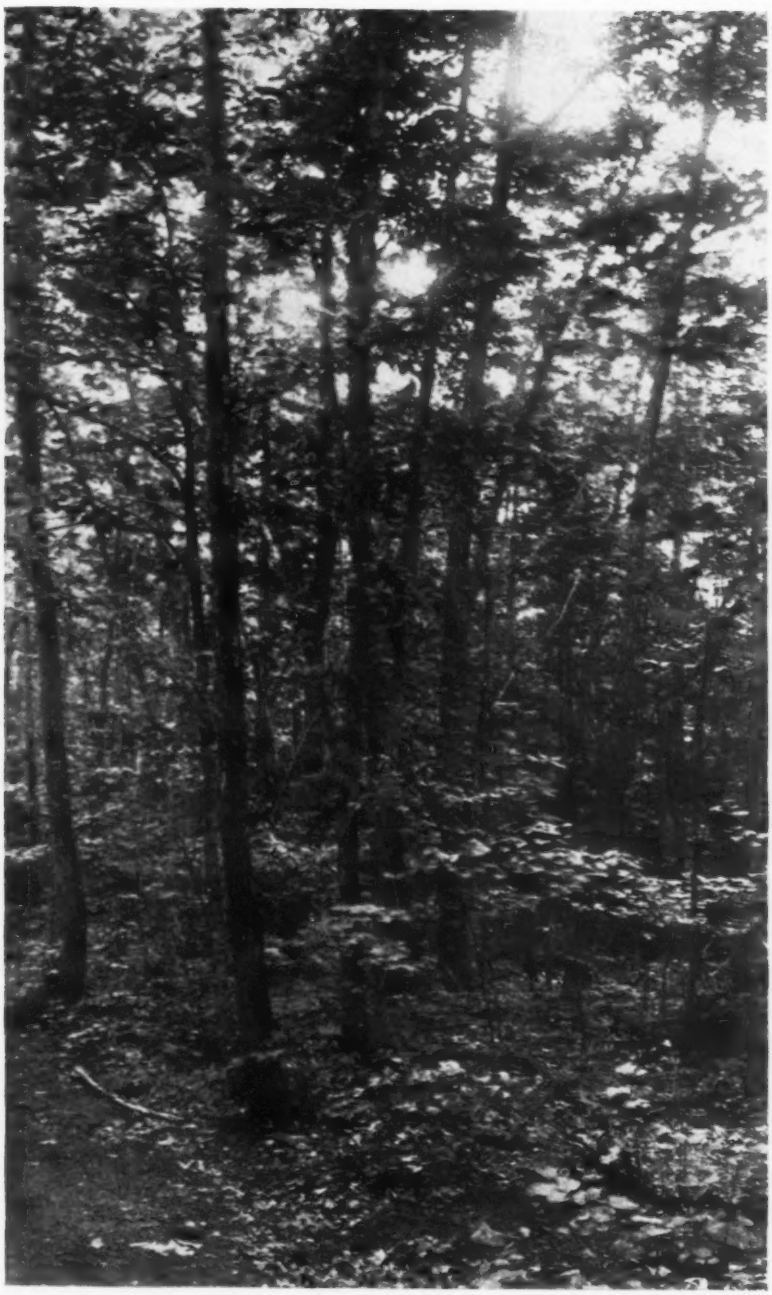
Surface fires injured this stand to such an extent that it had to be trimmed severely to save the wood.

powerful" is a good thought to have in mind when thinning a woodlot; for a radical treatment may be worse than none. This is especially true if the stand be composed of a shallow-rooted species which may be thrown by the wind if severely thinned. A sixth or a fifth of the standing wood is quite enough to take out at one time, if the thinning be solely for improvement purposes.

These moderate thinnings should be repeated at intervals, several years apart. It is a good plan to begin at one end of a woodlot and advance through it, from year to year, as material is needed. When the other end is reached, begin again and repeat the process.

In selecting trees for removal their condition should be closely studied. Dead trees come out as a matter of course, if there is any use for them. Suppressed, diseased and crooked trees come next in order. And then a few should be removed that are still thrifty, but which are interfering with the development of still more desirable trees. The shape and condition of the crown is a good index to the part the tree is playing in the life of a stand. Those that have well-formed, healthy crowns should be given the preference over those that have one-sided or partly dead ones.

If the supply of firewood, fence posts, and poles needed on the farm be taken out with the above considerations in mind, the woodlot will be greatly improved in a few years. In this connection a woodlot on a farm near Bristol, Conn., comes to mind. For years the owner has thinned a portion of the lot each winter for his home supply and a few cords to sell. The result is a beautiful stand of long, straight chestnut poles that will soon be worth a dollar apiece. Although he has removed all he needed and more besides, strange to say, his crop is now worth more than if he had not taken out a stick.



Young stand of hardwoods that would be improved by a moderate thinning. Hartford, Conn.

3. PROTECTION.

The woodlot must be protected from fire. It's a rare fire that does the woods any good. On the contrary, even the lightest surface fire does harm. It burns up the seedlings, it makes scars on the trunks of the trees, and disease follows. The harmful effects of severe fires are too well known to the readers of the COUNTRYMAN to make discussion necessary.

If a woodlot is frequented by hunters or berry pickers, notices should be posted requesting that visitors do not start fires.

If the lot borders on a public road, the leaves and rubbish should be cleared back for a few feet near the road, so that a cigar stump tossed from a passing vehicle will not start a fire. A similar strip should be prepared if the lot borders on a railroad right of way.

All the help about the farm should be instructed to leave other work and put out a fire in case one should get started.

In a recent investigation into the causes of forest fires in Massachusetts the writer found that next to the railroads, brush-burning on farms is responsible for more fires in the woods than any other cause. My brethren, these things ought not so to be. Of all persons in the world a farmer ought to be the last to allow a fire to start through carelessness.

A few simple precautions and prompt attention, will do away with most of the loss from fires in the farm woodlot.

MAN AND HIS NEIGHBOR.
A SERMON.

By Joseph E. Wing

Associate Editor of the Breeders' Gazette

WHEN the world was young and mankind was experimenting with living upon it there was very imperfect development of what we call Citizenship. Citizenship came, in truth, when men lived in cities, when neighbors were close and when men learned that the welfare of all is bound up together, so that what is well for one's self he finds best to offer to his neighbor.

When men lived far apart and in wild lands they felt no duty toward any but their own families and retainers. All else were "strangers" and were liable to be roughly dealt with if they by chance came across the lands of the lords of the soil. I have seen the same spirit in our own West. There each ranch having a neighbor 25 miles away has an individuality of its own, it is a little center, a world to itself, and the dwellers therein have a feeling of estrangement towards all the rest of mankind. The other men are "outcasts," when they come too near they are resented, they are made to feel that they intrude, no feeling of duty towards them exists, especially if they may be in another business than our own, if we have cattle and they sheep we hate them, if we have cattle and they dig coal we despise them, if they farm we laugh at them and pity them.

And yet, even on the ranch, which is near to the beginnings of civilization, so near indeed that the man who would study the beginning of things should go there to abide for a while and thus live over again the life of Abraham, the life of the feudal lords of England and France, even on the ranch there is an intense development of a sort of citizenship. It pertains to the immediate dwellers upon the ranch and to their nearly connected friends. For instance, if one man has clothing and another is needy through any accident, he freely offers of his own and expects no repayment. If one man through misfortune is without bedding the others share with him. If one man is sick any of the others

will willingly take his work, and if a neighbor comes along he is always made welcome to the best that the cabin affords; if he comes when we are absent he is expected to help himself to food, in fact he will get ready a meal and if he has reason to expect our early return he will prepare enough for all of us to have it ready against our coming.

There is, too, on these ranches the roots of many laws and customs seemingly inherent in the human mind and springing up spontaneously. There is the rude sense of personal dignity that leads a man to fight to the death rather than to suffer insult that reflects upon his honor. Call one of these quiet, peaceful cowboys a liar in jest and he retorts in kind; intimate that you believe him to be a liar, a thief or coward and he seeks to wipe out the insult in your blood. The thief is despised and where laws are lax and officers so far away that they can not punish wrong doers the men themselves take it upon them to avenge wrong doing and to punish the wrong doer. Thus not through hate alone but largely through the innate sense of justice in mankind the stealers of horses are pursued and oftentimes hung. So of trespassing sheep herders, the frontiersmen feel that to suffer them to invade their ranges would be to starve their cattle and horses and thereby drive themselves away from their homes, so the unfortunate herders are sometimes executed without law or jury. It is murder, to us, it is righteous justice to these men.

Now we cannot each one live for himself any more, as men did on the border, as they did in Abraham's time and in Charlemagne's. I cannot say "I own my farm, I retreat to that farm, I owe nothing to any man, I ask nothing from any man." Suppose I were to try that. My first lesson would be when Uncle Sam's postman came driving up in the morning with letters and mail. Can I refuse these things? They concern friends whose lives and thoughts are interwoven with mine. They concern business, I have lambs to sell, there may be a letter there from some buyer. No, I will have to let Uncle Samuel serve me, and that at once opens up the thought, "Who is Uncle Sam? Why, I am a part of Him. If Uncle Sam is doing evil I am part of that evil, if there is stealing in the Departments, it is because I and such as I are careless in who we send to do our bidding in Washington. If I do not get my express brought to my door by post it is because I do not help send Senators and Representatives who will think of me and of those like me, but we send men who think for the great Express Companies. So there at once is opened the door of Responsibility and I must choose to enter it there.

But suppose I decide to quit right there? "I belong to the United States but I refuse to have any nearer neighbors," I say.

I wish to go to the village and get into my buggy. As I ride along the smooth pike I am reminded of days when mud was axle deep between my house and town. Then I reflect that my father and my neighbors paid tax to build pikes. And Tom Crim, the assessor, comes and asks what property I own! What a shock that is when Tom Crim comes. Why is it always "Tom," I wonder? It is always a Tom or a Bill, I suppose because it needs a good humored man who can keep people in good humor. But how I do hate to be assessed! How astonished I am to find that I own so much! I protest that this is of small value and that not worth considering, but at the end I must swear that it is all set down truly, as God sees me. Then Tom rides away and I sit and think. For what is this tax money gathered? To maintain highways, that link me with other men, with the village, with the market, to make safe the bridges and to maintain our schools. I inquire and learn that the schools of the little township in which I live take about $10,000 each year to keep them going. I love a good road for it makes my life more pleasant and saves my

horses, and I can see that a good citizen is a man who will take his shovel and turn the water out of the road that passes his farm, that will throw the stones out of it, and plant trees along it so that other men may ride with comfort, as he himself loves to do. I can even see that the man is a bad citizen who drives over a road and leaves it worse than he found it, but what about this large tax for schools? That makes me think again. I need spend but a small part of the tax that we pay to educate my own children, what is it to me about the rest, whether they get educations or not? Why does the State step in and tell me that I must pay to educate my neighbor's child? And then as I think a little the reason comes plain to me, two reasons there are, first, the land does not belong to my brothers and me, it belongs first of all to the State, that is, to all of the people of the State, and we are permitted to occupy it and till it and enjoy the fruits thereof but only if we will contribute each year of these fruits to pay for schools for the children of all the people of the State. That means my neighbor's children. It is not at all a gift to them when we pay this tax, it is only our just dues to them, we can not withhold this tax and not do robbery, we can not lie about our possessions and not add theft to perjury. The State makes peace within our land, it makes safe the ownership of property, it asks merely that those having property shall contribute of it to certain elemental needs of all. And to be taught, to have implanted within its little mind ideas of knowledge, of truth, to have given it ideals and ambitions, that is the inborn right of the little child, whether son of the rich man or of the poor.

Then another thought comes to me. I can not withhold this education to these children for all that makes our property worth holding is that it is surrounded by an intelligent and a virtuous people. The better the people who live about me the happier I am, the safer our property is, the easier it is for us to get faithful service to care for this property. So it is clearly our duty to see that we truly declare our property to the Assessor, the tax gatherer will attend to the rest of it.

But I have paid my tax, though somewhat grudgingly, now have I not done all that is my duty to my neighbor and to his children? I am afraid not. Schools, unfortunately, must be set going and kept going and kept in repair. The tax is only a foundation on which to build, and the State throws right back on the citizen the most important part of the duty. The State says, I will provide the money for the schools, now the People themselves must provide the schools and they can have any sort that they choose. The State provides that there shall be Boards of Education elected by the people. Thus the people are asked to step in and say, by their representatives, what sort of schools they want. And they should select their wisest men, their best men, the men of them with the biggest hearts and the most love in them. It is a work of love, being in the Board of Education, either that or a work of hate. Men are elected there for one of two reasons, because they love children and wish to give them good schools or because they hate other men's children and want to keep down the taxes. I have been on the School Board. I went there myself determined to keep down taxes, and I lived to have an enlargement of the heart, and of the head, and we put up taxes quite a little before we were through, and I am glad to say that taxes for education have not been reduced yet in our township.

Now, how do we do this duty? Do we select our best men to sit in our Boards of Education? Do we select men who know most of schools and their needs, who love children and unselfishly glory to see them grow into better and nobler citizenship than we ourselves have? Or do we let things drift, or do we shut our eyes tight and run blindly at the gate, as one sees pigs do sometimes, believing that in

opposition to the new is all hope of goodness.

But supposing we have built our Boards of Education of good men and the schools are going, is our duty not done? No, one can't escape his personal responsibilty that easy. It is his duty to go to that school now and then, not to spy on the teacher, God knows most of them are noble men and women, but to give them the right hand of fellowship, to say, "you are doing well, thank you," to learn somewhat ones self, to keep young again, to let a little heart expansion take place as one sits and looks at all the bright, eager young souls each one facing a new world full of mystery and promise. No, nothing will relieve the man of his duty of personal contact, he can't draw into his shell, he must rub up against men and women, against boys and girls, and God grant that his soul be good enough and pure enough and sweet enough so that he makes them better whom he touches.

But now suppose I have seen that the schools are all that they can be, have I yet reached the limit of my duty as a citizen? No, I have indeed only begun to find my duty. Here comes the next thing, and the most important of all. I must not draw into my castle, or into my shell, and refuse contact with my fellow man. It is for me to be a good man, a truthful man, a just man, and to so live that every man who knows me and meets me is the better for being with me. It is for me to infuse new hope in the world and new cheer. I meet children along the way, they look at me, inquiringly, wondering with their little minds what sort of man I am. Perhaps I dislike their father or their mother, perhaps with cause. Is that the fault of the little child? Shall I cloud that little life by a frown or by passing it unheeded by? Can I not by a smile, oh so easy and cheap a thing is a smile, can I not with that smile call forth an answering smile from that child and cause to enter that little mind a feeling of reassurance, of trust, of faith, of belief in the world as being a safe and pleasant place to live? Can I without wronging my neighbor refuse that smile, that cheery word, that recognition of the good that is in him? God knows how pitifully little is the difference between the best of us and the worst of us. Some have had their opportunities, some have not, and some have one gift and some another, but we are all as God made us and oftentimes much worse! God now and then creates a soul stronger and saner and sweeter and purer than the rest of us, for what? Not to withdraw into seclusion and bar us from approach, but to live right among us and so that we might absorb of that sweetness and strength. Down in Virginia since the war many of the best people are poor. I am told that it has made all the community stronger, because now the daughters of these good people teach school and the poorer people who were once in a class by themselves now absorb of that spiritual strength, of that gracious personality. Pride is a good thing, but arrogance is evil and breeds evil. "He who would be greatest among you, let him serve."

FORAGE CROPS FOR SUMMER SOILING.

By G. A. Billings,

Dairy Husbandman, New Jersey State Exp. Sta.

WHETHER soiling will be practiced depends largely upon the location of the farm and the conditions respecting the supply of summer feed for the dairy. If there is no pasture and area of tillable land is somewhat limited, the practice of the soiling system will be economical and satisfactory, because it is possible by this system to meet the needs of the animals in the way of succulence and to provide a continuous supply of forage from May 1st to Oct. 15th or Nov. 1st as the season permits. Furthermore, it allows for the keeping of a larger number of cows than would have been possible by the pasturage system.

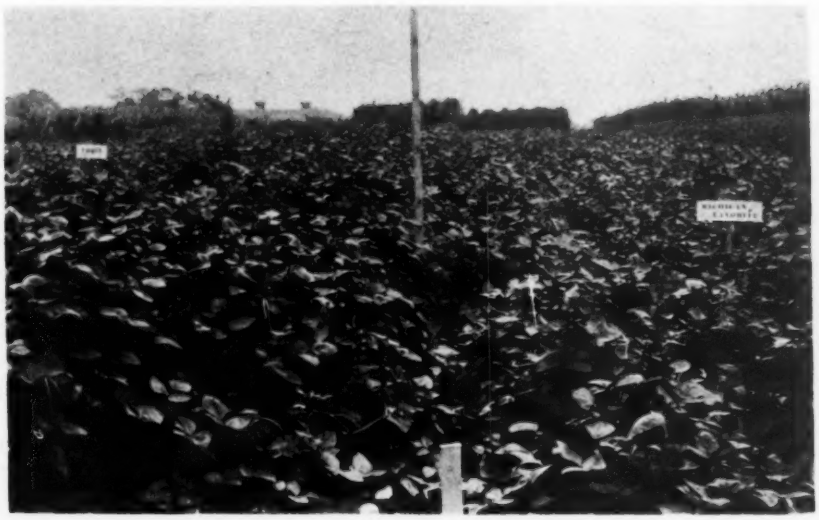
At the College Farm 78 acres has provided a continuous supply of green forage in summer, silage and dry roughage in winter for a herd of fifty head of cattle and ten horses. Concentrates have been the only feed necessary to purchase. Had the pasturage system been adopted there would have been no provision for winter crops nor would the improvement of soils have been as rapid, since the raising of forage crops of a leguminous nature utilizes atmospheric nitrogen for the benefit of present and succeeding crops. From careful experiments we have found that from May 1st to Nov. 1st it has been possible to arrange the soiling crop rotations to permit the keeping of three and one-quarter cows with the necessary forage on one acre of land. Of course a feed ration was given in connection but in many instances the amount was small.

When the object is not to supply the entire green forage but to supplement the pasture, rye, wheat, clover or oats can be used for pasturing or oats and peas, alfalfa, cow peas, corn, etc., can be fed in the stable or paddock. There are many times when this is directly advantageous, namely, when under climate conditions such as drought, the animals are poorly fed for lack of a continuous supply or when from a shortage of the winter's supply the cattle are allowed to graze when the pasture is insufficient. Again, frequently the cattle have access to such weeds as garlic or to pools of stagnant water which give undesirable flavors and taints to the milk at certain times of the year.

SOILING CROP ROTATIONS.

In order to carefully study the subject of forage crops and to have on hand data for answering the questions which might arise, the New Jersey Experiment Station in 1896 began a series of experiments which have continued up to the present time, of all kinds of crops suitable for soiling or dry roughage in winter; the effect on the quantity and quality of milk produced as well as the relation to soil improvement. The work has been carried on with a great deal of satisfaction, establishing the fact that it is possible to provide a continuous supply of green forage for the six summer months on a comparatively small area, keeping the land constantly occupied and without exhausting the soil to any appreciable extent. A statement of the kind of crops grown, date of planting and period of feeding is as follows:

Crop.	Date of Planting.	Period of Feeding.
Rye	Sept. 1 to Oct. 15	May 1 to May 15
Wheat	Sept. 1 to Oct. 15	May 15 to May 25
Crimson Clover	July 20 to Aug. 10	May 20 to May 30
Alfalfa (1st cutting		May 25 to June 5
Red Clover	Aug. 15 to Aug. 30	June 1 to June 10
Can. Peas and Oats	April 1	June 10 to June 20
Can. Peas and Oats	April 15	June 18 to June 30
Can. Peas and Oats	Apr. 10 to Apr. 30	July 10 to July 15



COWPEAS

Barnyard Millet	May 15 to May 20	July 15 to Aug. 25
Flint Corn	May 1 to May 5	July 25 to Aug. 5
Barnyard Millet	June 15 to June 20	Aug. 15 to Aug. 10
Alfalfa (3d. cutting)		Aug. 5 to Aug. 15
Cow Peas	June 5 to June 10	Aug. 15 to Aug. 20
Kaffir Corn and Cow Peas	June 25 to July 5	Aug. 20 to Sept. 1
Flint Corn	May 15 to May 20	Sept. 1 to Sept. 10
Soy Beans	July 1 to July 10	Sept. 10 to Sept. 15
Sorghum and Cow Peas	June 15 to June 30	Sept. 15 to Sept. 25
Cow Peas	July 15 to July 20	Sept. 15 to Oct. 10
Barley and Peas	July 25 to Aug. 10	Oct. 10 to Oct. 13

The various forage crops as stated are about in the order named for planting and feeding to furnish a continuous rotation. In actual practice, however, one would not usually plant the variety mentioned. Some of the feeding periods overlap but they were inserted in order to show what crops will mature for feeding at the different periods. Where alfalfa is grown, all or a part of the forage can be fed green as circumstances require, and the remainder made into hay.

It requires some judgment and experience to plan out a schedule for a continuous supply of green fodder, and it is very important that a continuous supply be maintained or there will be a falling off in the flow of milk. To do this intelligently one must know the characteristics of the various crops, the best time to plant, the length of period from seeding to maturity and the best stage at which it should be harvested in order to get the greatest benefit in feeding. Futhermore, it is necessary to consider that plants differ in respect to the amount of food they furnish. It is therefore, important to know the amount of water in the forage crop under consideration, since the value of the crop depends upon the actual amount of dry matter it contains, for example, such crops as Barnyard Millet, Pearl Millet, Teosinte, Yellow Milo Maize, Sugar Cane and those plants which are native of southern climates and make their growth rapidly, while valuable for soiling supply less actual food nutriments

BARNYARD MILLET (14.3 tons per acre)

per ton of fodder than such crops as Can. peas, oats, or corn whose natural habitat is at a more northern latitude.

It is important to plant the supply of forage crops so that no plot will remain idle but that when one crop is harvested another is planted. Some of the soiling rotations which have been practiced at the College Farm are given as examples,—

Crop in one year rotation.	Time of Seeding.	Time of Cutting.	Yield per Acre tons.
Rye and Crimson Clover	Sept.	May 1-10	8.05
Oats and Peas	May 10	July 1-10	7.60
Soy Beans	July 10	Sept. 1-10	9.00
Total			24.65
Oats and Peas	April 1	June 10-20	7.34
Japanese Millet	June 20	Aug. 1-10	8.73
Barley and Peas	July 20	Sept. 10-20	6.03
Total			22.10
Oats and Peas	April 10	June 1-10	6.80
Cow Peas	June 10	Aug. 10-20	8.20
Barley and Peas	Aug. 20	Oct. 20-30	6.30
Total			21.30
Rye	Sept.	May 1-7	9.60
Cow Peas	June 10	Aug. 25-Sept. 1	10.50
Barley	Sept. 2	Oct. 27-Nov. 1	2.60
Total			22.70
Mixed Grasses	Sept.	June 20-30	7.00
Corn	June 20	Aug. 20-Sept. 1	12.24
Total			19.24
Oats and Peas	April 29	June 29-July 6	10.20
Flint Corn	July 10	Sept. 22-30	11.00
Total			21.20

Oats and Peas	April 2	June 26-July 4	6.20
Kaffir Corn and Cow Peas	July 10	Sept. 1-16	12.20
Total			18.40

IS THIS TRUE?

By Uncle John (John W. Spencer)

O I AM not sure that it would matter if four-fifths of the farms and four-fifths of the farmers were cut out from the occupation of Agriculture. No doubt there would be a lot of speculation about it by magazine writers—people who do not know a shoat from a goat. Perhaps Lord Kelvin would come in with one of his starve-to-death prophecies. Statisticians would revel in tables and prognostications. But what would that matter? Statistics may give figures, but not the situation, and it is the situation that controls results. Remember that my boy.

Statistics gave Russia overwhelming resources over those of Japan, but Russia was the under dog in the late war just the same. Figures can never give the power of the man behind the gun—and let me say the hoe as well.

Much of our farm lands have no excuse for ever having been reclaimed from the forest, and a large per cent. of four-fifths of our farms are not commercial farmers—they are men who only manage to live on what they can get from the soil. Their occupation supports them more by their savings than by their makings.

Let us do some supposing and if I become illogical call me to account. Let us suppose that the efficiency of the remaining fifth farmer was to be increased five times, it stands to reason that such a man would be able to produce as much as all five farmers did before. If such is true, the world would not feel the loss of the four who dropped out, would it?

"Beg pardon. Do I understand you to say that agriculture has certain limitations and affords no field for men of five times greater efficiency?

"I am not so sure about that. When your old uncle was a boy all the boots and shoes of his rural community were made in a near-by hamlet. The proprietor was a German called "sawed-off Joe." He worked twelve or fifteen hours six days in the week. He was as efficient as he knew how to be. Diligence and long hours were his only talents towards that end. After a number of years Joe paid for his house and a cow pasture and meadow of five acres and then he died. That same community wears more shoes and better shoes than were worn in Joe's time. How has the increased supply come about? Not by increasing the number of Joes. One man may be said to provide that community and a score of other communities like it with their supply of foot wear. That man works fewer hours than Joe and he lives in a luxuriant home. Why the difference between the shoe maker and the shoe manufacturer?

Greater Efficiency is the Difference.

Some of the salient points of the greater efficiency are,

Executive Ability,
Technical Knowledge,
Capital.

Give the fifth farmer all of the above points of efficiency and you will see agriculture elevated from a shop basis to that of factory basis. Do you believe it?

AGRICULTURE OF OTHER NATIONS—II

BULGARIA

By D. G. Dragoshinoff, '07

HARVESTING WITH SICKELS.

BULGARIA is an agricultural country, for not less than seventh-tenths of the people are actual tillers of the soil. Hence, agriculture has a far deeper meaning to us Bulgarians than it has ever had or will ever have to the American Nation. In fact, the very existence of our nation depends upon it, for we have no industries developed to such an extent as will enable us to compete with the European Nations. Austria and Germany are ever on the watch to crush any infantile industry that may show indications of strength, and their manufacturing goods flood our markets. In a way, we are driven to agriculture as our stronghold.

Bulgaria is a very small country; in area, it is four-fifths the size of New York State, and of only one-half the population. A ridge of high mountains runs through the middle of it, from east to west with fertile plains and valleys on both sides which give good opportunity for agriculture. On the southern slopes of this mountain range are the well known Gardens of Roses where most of the attar of roses used in the European and American perfumeries is produced.

From 1393 to 1877 the entire country, politically, was under the absolute control of Turkey. No commerce or industry could thrive during that period, the parasitic Turk consuming everything that he could lay hands on. The whole population took to agriculture, that being the safest occupation. It was, however, conducted in the most primitive manner, the farmer having no ambition to produce more than he needed for his own use, for all the surplus went into the insatiable stomach of the Turk. The one consoling thing about it, however, was that practically every one had some land which he could call his own, though often that did not amount to more than two or three acres. In other words there was no absolute poverty. We had no proletariat, we do not have it even now to any great extent.

Another result of the Turkish rule in Bulgaria is the distribution of the population into small villages. There are no solitary farms. Under the Turkish administration lawlessness was at its height. At that time might was right. A farm by itself was something impossible. The people preferred to live in villages of from fifty to a hundred families. All the farm lands are outside of the village. This factor is of great importance in ex-

plaining the present condition of agriculture in Bulgaria. Now that the country is free from the Turkish rule this detrimental factor ought not necessarily to exist; it does, however, still exist and is working its inevitable injury to our agriculture.

Coming to the actual conditions of agriculture in Bulgaria I may say that at first sight they seem discouraging. Such is the opinion in general throughout Bulgaria, be it of farmers or others. Such is not my opinion, and I will try to point out the reasons.

The matter of markets for our agricultural products does not cause us any anxiety. We have a ready market for our wheat in Europe, and even in England. Argentine or United States wheat cannot oust us from the European market for the reason that farm labor in Bulgaria is paid very low (25 to 40 cents) and that we are much nearer to the market. We have a very good market for beef producing animals in Constantinople. By railway or steamer it takes from twelve to twenty-four hours from any part of Bulgaria. It has a population of pretty nearly one million inhabitants, and it must get all its flour and meat supply from outside. At present we supply a large part of the meat . The reason that we do not supply more is that we do not have it. The fact that meat selling in Bulgaria at 5 cents the pound sells at Constaninople at from 20 to 25 cents may suggest a great many possibilities. Several years ago there was practically no exportation of eggs; it was found that they sold well in Europe and within three or four years the exportation amounted to $1,000,000 worth of eggs.

I have said enough about possibilities. There is no denying, however, that the actual agricultural conditions of Bulgaria are very bad indeed. The farmers employ cows and oxen as draft animals in the place of horses. They prefer the cows because they can get some milk out of them for home use,—milk being really the by-product. The calves if not needed to replace some old worn out animals are sold to the butcher. The result is that we have very poor specimens of draft, milk, or beef producing animals, all of which are usually represented by one and the same animal—a deplorable state indeed. From what I have said about the cows it is easy to see that there is no such thing as a dairy industry in Bulgaria, except in a limited sense, for we have a large number of

Costume worn by peasants near Kustendil

sheep which besides the wool they furnish give also some milk. Were we able, however, to produce any dairy products we could find a ready market for them in the surrounding countries. The development of animal husbandry and dairy industry has a promising future, but it has not been attempted as yet on account of the previous unfavorable conditions and mostly because of the general ignorance on these matters.

And now let me be a little more explicit as to what are our chief agricultural troubles. In the very heart of them is our *land system*. I have already mentioned that our farmers live in villages, all the farm lands being outside of the village. This was a necessity once, it is not a necessity any more. Moreover, the fields of each farmer are not in one place but scattered in all directions around the vil-

PEASANTS IN A NATIONAL DANCE

lage; every farmer trying to have a field or two in the most fertile section of the land. For that reason the children of each farmer usually divide each field between themselves at the death of their father. It often happens that a farmer may own five acres of land, which may be composed of fifteen different fields, scattered in all possible directions around the village, and generally from one to three miles away from his home. It may be easily imagined how much time has to be wasted in cultivating these fields. From this land our farmer does not usually expect to make a profit but he does expect to make his living at any rate. There are no fences around the fields for the latter are too small to justify such an expense.

All the village possessions are divided into four sections, exclusive of the forests. One of the sections includes all the meadows, and practically every farmer has a piece of meadow in that section. All these meadows are natural and our farmer has the satisfaction of having Mother Nature take care of them; all he does is to mow the grass and cure the hay when haying time comes. He has no idea of sowing grass seed. The other three sections are used in rotation, which is as follows: first year—corn; second year—wheat, oats, barley, rye, etc.; third year—fallow. When a section is left to fallow every farmer who has land in that section must leave it to fallow, for the village herd has the right to graze over it. When it is planted to corn every man must plant corn or nothing. The reason for this is self-evident. The individual fields being so small there is no road leading to every one of them, and the farmer who desires to get to his field for harvest must pass through his neighbor's field. But on account of the different periods for harvesting of corn and the other cereals great many troubles might arise. There is always a section of land left for truck farming, and it is curious to see how well that branch of agriculture is developed in Bulgaria. When there are two or three men in the family and the farm is rather small, one or two of them go to Austria, Hungary, or Roumania for a season or two to do truck farming. This system of farming leaves very small chance to the farmer as to what and how much he is going to sow. He has got to do what the whole community does.

The only kinds of fertilizing our farmer does is in the use of manure from his stock, which, considering the amount of stock he keeps, is not very much. Little as it is, he rarely takes advantage even of that, for the remuneration he may get from it does not seem to him to justify hauling it *so far away* and to *many different places*. And it seems surprising to me that the land still produces as well as it does after being cropped in this manner for more than ten centuries.

The helplessness of the case of our farmer seems still more apparent when we consider the implements he is using. His plow is as primitive as it can be. It is made entirely of wood except for the point of the share and a vertical knife-shaped coulter. There is no moldboard, its place being taken by a round piece of wood about two inches in diameter stretching from the point of the share obliquely backwards. This type of a plow cannot do more than scratch the ground to a depth of about two or three inches. It is pulled by a pair of cows or at best a pair of oxen. No cultivators are used, all cultivation being done with hand spades. While this enables our farmer to give better cultivation to his corn than the American farmer does to his, the increase of returns does not justify the expenditure of so much time and labor.

Harvesting is one of the most tedious operations, no reapers or binders being used. They could not be used even if the farmer wanted to on account of the small size of the fields. All the harvesting is done by hand, the sickle being the instrument universally used. Even the scythe is not used for that purpose to any extent. He uses the latter only to mow his meadows.

When thrashing time comes the real anxiety of our farmer begins, for he has no thrashing machine. A rainy week might cause half of the grain to sprout as he has no place where he could put it to protect it from the rain. The thrashing is done on the bare ground, the sheaves being spread out in a circle. Some of the farmers harness their cows in a heavy wooden cart and let them pull it over the sheaves. Others have several boards nailed together in the form of a sleigh with sharp pieces of flint stone on the under side. This shakes off the grain and tears up the straw, the latter being used to feed the cattle in winter. Those who can afford it, use horses to run over the sheaves, as they shake the grain off much faster. The grain when gathered from the ground is very dirty; and this depreciates the value of our wheat very greatly.

Root crops are not grown to any extent for our farmer has little use for them just now. All he thinks of producing is just what he needs for himself and his family. Even potatoes are grown to a very limited extent.

Another factor which is a great drawback on the development of our agriculture is the religion of our peasantry. Greek Orthodoxy is the prevalent religion. Superstition is all powerful. I realize that it is a pleasant thing to celebrate Holy Days, but when there are as many of them as the Greek Orthodox church prescribes to its followers it becomes a matter of economic importance. Rarely a month passes during which there are less than two or three Holy Days besides the Sundays. This is especially true during the summer when a good deal of farm work is at hand. When to the caprices of the weather we add the superstitious rites and observances imposed by a church as ignorant as its followers, very little agricultural progress can be made.

Such is the state of agricultural affairs in Bulgaria, and I take no pride in describing it. A ridiculous land system, lack of even simple agricultural knowledge, lack of capital, a superstitious agricultural population are factors which make any agricultural development impossible, unless they be removed.

I have spoken only of one class of people, namely—our peasants, for they constitute the larger part of our population, all of them being farmers, and there being only very few farmers outside of their class. The population of the cities and towns, which constitutes our intelligent class, is not interested in farming. That is perhaps

why agriculture is suffering.

There are exceptions to this backward condition of affairs, for we have a few model farms of large size, where the best of modern machinery and good scientific methods are used. But these are very few. General education partly, and mostly agricultural education will do a good deal towards improving the present conditions. And it has been already attempted by the Bulgarian Government.

OUR WINTER BIRDS IN THEIR RELATION TO AGRICULTURE—III THE SAPSUCKER.

By Vaughan MacCaughey, '08

The Sapsucker is a kind of woodpecker. The name, however, is often wrongly applied to other birds, such as the smaller woodpeckers and the nuthatches. The Sapsucker, often called the yellow-bellied woodpecker

THE SAPSUCKER

because of the yellowish color of its under parts, bears a superficial resemblance to the Downy woodpecker, from which it may be readily distinguished by its broad black breast band passing from the base of the bill down across the breast. This band is lacking in the other woodpeckers. The crown and throat of the male Sapsucker is deep scarlet, but in the female this color is absent.

The Sapsucker winters in the southern states, and goes as far south as Central America; it nests from Massachussetts northward, so that in the eastern states the bird is known largely as a migrant, appearing in the fall and spring, although not truly a winter bird, the Sapsucker is of such importance, being the only woodpecker that does any considerable harm, that it merits consideration with the other members of its family. The Sapsucker, as its name implies, sucks the sap of trees, and for this reason is injurious. The trees most often attacked are birch, maple, apple, ash, oak and mountain ash. To obtain the sap, the bird drills numerous holes very close together in more or less regular rings about the trunk or larger branches, usually one ring being close above another. The holes are about one-fourth inch deep, penetrating the bark and the outer part of the wood. Very often the trees are practically girdled, the holes being drilled so close together that the wood between them breaks, leaving rents in the bark an inch or so long, and in such cases the trees usually die the first or second year after the girdling has been done.

Some writers have supposed that the Sapsucker uses the sap as a trap to entice insects within easy reach, but careful observation shows that while it does occasionally catch insects, these do not form a very large proportion of its diet. Of the 81 stomachs examined by Prof. Beal, only one contained borers, so it is not nearly so valuable to the fruit grower as is the Downy Woodpecker. Nearly one-fourth of the food consists of the soft wood lying behind the inner layer of the bark. Ants form an important item of diet, and flies, beetles, caterpillars, grasshoppers, spiders and plant lice are also eaten.

Trees attacked by the Sapsucker suffer in several ways. First, there is the actual loss of sap, which is an exhaustive drain. Second, the tree is more or less completely girdled. Third, beetles, the adults of borers, lay their eggs in the holes drilled by the bird, and the tree quickly becomes infested with borers. Fourth, there is the opportunity for the entrance of fungus diseases and bacteria. On the other hand, fruit trees are not frequently attacked, the bird is seldom abundant, and enough of its food consists of insects to at least partially compensate for the harm it does.

The Sapsucker belongs to that class of birds whose beneficial and noxious qualities are about evenly balanced, and while, in certain cases, its destruction is justified, as a general rule the Sapsucker should be allowed to live.

THE FARMER, AN ADVERTISER

By Milton Pratt Jones, '08

A knowledge of the science of advertising, must in the future, form, for many farmers, a part of the knowledge of the science of agriculture. Except for the breeders of live stock, comparatively few farmers have attempted to sell their produce through advertising. The reason is that they met the demands of the market as they found them. For ordinary goods they secured ordinary prices.

But the young men of our agricultural colleges, who go back to the farm, will not be content with producing ordinary goods. Their real success as farmers will be judged by what they produce and their pride will allow them to produce only the best, the best calves, the best apples, the best potatoes, the best butter. In order, however, to profitably produce such goods, more than ordinary price must be secured. To secure this price, there must be a demand for the best goods. In order to find this demand if it really exists, to create it if there is no de-

mand, and to keep up the demand, the farmer will advertise.

People can be taught to use and to keep on using "River Valley Certified Milk" and "Perkins' Specially Selected XXX Apples" as well as Ivory Soap and Uneeda Biscuit. To accomplish this it is essential that as the first step in his advertising, the farmer should name his products. A manufacturer would not let a cream separator or an engine go out of his shops without a name. No more should the farmer let his products leave the farm, without a name, a name that from the first will set a high standard of quality for it will be the name of the results of his best effort. The farmer may then advertise by any or all of the many ways which have already been used, such as in magazines, newspapers, street cars, by calendars, letter, personal canvass of better yet, by some original method. The problem is to advertise judiciously, convincingly and honestly, at the right time, in the right place. To this end, the time may come when lectures on advertising will form part of the curriculum of the agricultural student.

WHERE? WHY?

By Horace F. Prince, '07

We know it is true that farming offers the quickest returns for education energy and application; that it is the only absolutely independent life one can lead; that it is the purest healthiest and truest occupation; that many of the best and wisest Americans at some time or other have been tillers of the soil, and yet many of the students are planning not to go back to the farm. It is probably true the statement, "that graduates from the College of Agriculture are able to obtain a better salaried position than from any other college at Cornell," and many students have this aim in view, to get a good job. They say, perhaps, "after I have worked a few years and saved enough money, so I can make a good start, I will go back to farming and settle down." Is this really a sound business proposition?

When a young man has completed his college course he is in a fit condition to go out and work on his own hook. His hopes, aims and mind are at that point where he will do the most for himself. Why should he hesitate? But then the siren song, "here is a chance of a good, easy position, I can live on easy street, save money, and that certainly beats working on a farm from morning to night," even though he really knows the last statement is not true.

Does working on a salary develop your capacity to the greatest possible extent? If it does not it is a failure. A salaried man is always a follower, depending on another for his leader. He is continually hampered on all sides, and is told "thus far and no farther may you go." It cripples his best endeavors because he follows in lines laid down by somebody else thus freeing him from responsibility and lessening his growth, which ought not to happen. Now is the time he is the most receptive and impressions are easily made.

It is often said that this or that professor in our college would make a failure at farming, if put out on a farm. Most likely it is true he would not succeed at this late date. But this same young man, in all probability, would have made an even greater success farming if he had taken it up on completing his college career. That he had ability was shown by the success he has made here.

True, a salary furnishes a livelihood, but is that the only thing in life worth having? Do you want to become more or less of an automaton for the sake of being assured a livelihood from the start? A salary will diminsh your efforts and makes a prodigal man instead of one acquainted with economy. The efforts of a salaried man tend to enrich his employer, how much better it would be to expend that same energy for oneself.

Breadth of character of mind and of body are just as valuable an asset as money, if not more so. The first thousand dollars accumulated from

the products raised by your own hands, may take longer than any of the succeeding ones, but the extra time is more than repaid in the development of your ingenuity, strength of character, and love for the farm. In the end you will be the possessor of more of these earthly goods than by working on a salary.

Some persons are not so situated that they can go into farming immediately, but if you can, give the farm a trial. It is worth it, as you will acknowledge later. There are some things in life you will never gain any other way.

ENTOMOLOGY AS SOMETIMES WRIT AT CORNELL.

Compiled by Prof. Slingerland from examination blanks

"The Crustacea, Archenoid, Hypernoid and Amonoid are near relatives to insects."

"The insect can be distinguished from its near relatives by his anatomy."

"Insects can be very easily distinguished from those animals as insects have no vertebrae and all animals do."

"The bugs are near relatives of the insects and are distinguished from them by the probosis or sucking mouth-parts."

"The fungi are near relatives of insects."

"Insects are arranged in sections. Their spinal column runs along the underside. Some breathe through little holes provided through their body and some with their antennae."

"Their internal organs run all through the body."

"The feed channel runs straight through. There is the abdomen and thorax. The abdomen is on the bottom, the heart on the top of the insect."

"Insects have a blood system in the front part of the body and a nervous system in the back part."

"The heart is situated near the head in the upper portion of the neck-like connection between the head and body, and the circulation is somewhat peculiar."

"The circulation of the blood is simple and the blood may be of any color."

"The blood vessels are just under the skin, having small enlargements all along the system, same as the capillaries in our own system."

"The blood veins are situated around the body just under the shell or skin. It consists of a large vein or artery and many smaller ones."

"Insects breathe by means of holes near the base of the wings, known as breathing holes. They have but little circulation."

"Some of the insects breathe through the pores of the body while others breathe through the regular way."

"Insects do not have a nose, but seem to breathe with their whole body. The blood occupies all the space not taken up by something else."

"Insects have lungs that may occupy the whole of the body or be located in any part."

"Sometimes insects are comparatively all lungs."

"Insects breathe through the antennae."

"The nervous system runs through the body in any course and has no direct communication with the brain."

"The nervous system is the same as in vertebrates except that it is located in the left ventrical."

"Spiders are not built like insects as they differ in the matter of egg-laying."

"Spiders have no wings. They have a single stinger instead of two antennae."

"A spider conforms more to animals than insects.

"Insects grow, by the enlargement of all their organs due to the assimilation of food."

"Large insects do not grow, but small ones do."

"Insects grow in the winter from the egg which is laid in the fall."

(To be Continued.)

The Cornell Countryman

B. H. CROCHERON, Editor
H. F. PRINCE - - Alumni Editor
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M. P. JONES, - Business Manager
S. G. McCLOSKEY, E. F. WILLARD, JR., G. H. MILLER - Assistant Managers

FEBRUARY, 1907

Positions for Old Students

Many requests come to the College of Agriculture for foremen, managers overseers and superintendents. It would facilitate replies to these inquiries if any old students, graduates or others, who desire such positions, were to write to the office stating just what they would like. To these persons the inquirers could then be referred. Students should make a brief statement of their experience and qualifications.

L. H. BAILEY,
Director.

The College and the Honor System

Now that the Honor System has gone into effect in the College of Agriculture it remains for the students to make of it an honor or a disgrace.

The articles as adopted by the mass meeting of students said, "All students shall be given an opportunity to sign these articles and if a majority shall sign them they shall hold for all students." (Art. ii., Sec. a).

It is now no longer the pleasure of a few men but the duty of the entire student body to uphold the honor system and to see that it is carried out to the letter and to the spirit of all its articles. All time for talk is over. It is an affair of college and of student honor. Every man has the reputation of his Alma Mater to uphold as long as this system is in continuance.

It is unnecessary to say more.

The Era of Agriculture

THE financial reviews with which the leading newspapers of the country summed up the year nineteen six, present an accumulation of statistics pointing to the phenomenal success of the farmer and of agriculture.

Some state that the nation cannot keep pace with the farmer and that unless our foreign markets are increased, financial ruin confronts us caused by all the horrors of overproduction. Even if our foreign markets increase, they say, our railroads cannot carry much larger crops to the seaboard. Our people are helpless to consume them. What, then, is to be done if the farmer should insist upon getting still bigger crops?

The Secretary of the Treasury said, "We, who pray, should ask God to save us from any increased prosperity. * * * We are growing more crops than we can harvest and harvesting more than we can haul to market."

Although the reviewers dwell at length upon the new agricultural era, which they think has arrived, their general cry seems to be "Stop the farmer from producing more!"

Of course everyone expects the reviewers to be somewhat hysterical for their horizon is often bounded by the confines of Wall street and is seen through the eyes of the brokers and dealers. Making due allowances, how-

ever, it does seem as if the nation was strong enough to withstand even the shock of the great crops. We still hear of famines in Russia, Turkey and Austria. It is even said that there are hungry people left in America. Our home demand is certain to expand enormously within the next few years. Malthus pointed out that an increase in the food supply is followed by an increase in the population. The foreign markets are growing rapidly and the railroads will most certainly be able to carry any amount of grain and meat that it is possible to produce. It is only the quickly perishable crops with which difficulty may be found.

Despite the advice of the reviewers and of the Secretary of the Treasury we think it is yet a little early to pray for a discontinuance of the present prosperity. The farmer hasn't yet outgrown the nation.

Our College Song Book

Do you know the words of the Cornell Songs? Have you a collection of all the good old songs that you like to sing? The new book prepared by students of the College of Agriculture is just off the press. It contains the words and music of many Cornell songs such as Alma Mater, the Evening Song, Cornell, and our own college songs as "The Call of the Fields," words by Professor Bailey, "The Old Farm at Cornell," and others. It has the best of the old college melodies and patriotic airs. The book comprises over sixty songs with the words and music. The cover design is particularly attractive being in red and white with a drawing of the new buildings of the College of Agriculture.

As the edition is limited, the song book will be sold to students and alumni of the College of Agriculture before it is offered for public sale. The price is only fifty cents, postpaid sixty cents, the books being sold at about cost. In order to assist those who have devoted much time to its preparation the COUNTRYMAN will receive orders and will endeavor to see that the copies are delivered.

The thanks of the alumni and students of the college are due to those who have freely given so much time and thought to the preparation of this book. It has been needed for years.

CAMPUS NOTES

The Horticultural department announces the acquisition of a gasoline engine and a complete spraying apparatus. This is to be used at first for the suppression of the San Jose scale which has appeared on the trees in various parts of the Horticultural grounds. The apples along Garden Avenue are especially infested and will probably be among the first points of attack.

After a thorough crusade against the scale on these premises, the apparatus will be used in a campaign over the whole campus, thus greatly enlarging its sphere of usefulness as well as beginning a movement which is of great value in the maintaining of the beauty of "our hilly home."

* * *

Preparations and arrangements are already being made for the Agricultural Banquet and the annual meeting of the New York State Experimenters' League. These two events will occur at practically the same time during the latter part of February.

This meeting is to be made as imporant, instructive and interesting as possible to the largest possible number of persons. It is to be of especial

interest to the students of the University as well as to the members themselves, and to this end several prominent speakers are hoped for. Already invitations have been sent to the Honorable James W. Robinson of Quebec, and to Professors Hamilton and Kellarvan—all men of recognized importance. Moreover, the members of the Geneva Experiment Station staff are also to be included among those to whom the meeting will appeal. It is possible that some of the short-course classes may be excused in order to allow students to attend the addresses.

* * *

Professor Craig, of the Horticultural Department, has attended several conventions and meetings during the last month. About the time of the holidays he attended the meetings of the Quebec Pomological Society, at Montreal, and of the New Jersey State Horticultural Society at Trenton, and on Jan. 8 the meeting of the Pennsylvania Horticultural Society at Dover, Delaware.

* * *

Professor H. H. Whetzel made an address to the Ginseng Growers' Association, upon the diseases of the plant, during the recent holidays.

* * *

Cornell University was represented at the State College of Pennsylvania, during Farmers' Week, by Professor T. F. Hunt, Director-elect of the Pennsylvania College of Agriculture and Experiment Station, and Professor James E. Rice. Professor Hunt spoke on "The Future of Agriculture in Pennsylvania," and Professor Rice, on "Poultry."

* * *

Professor R. A. Pearson attended the Milk Conference at New York, held under the auspices of the Association for the Improvement of the Condition of the Poor, and spoke upon "Model Milk Shops." The attendance at the Convention included some fifty experts who gave a thorough discussion of the entire subject of improving the milk supply of New York City, different phases of the subject being given to each speaker. A full report of the convention is to be published in the near future.

* * *

Dr. J. A. Bizzell addressed the Farmers' Institute meeting held at Ludlowville on the eighth of the month.

* * *

The State Bureau of Farmers' Institutes held a special poultry session in connection with the meeting of the American Poultry Association at Auburn on January 8 and 9. Most of the short-course students in Poultry Husbandry attended the meeting and Professor Rice gave an illustrated lecture on "Education and Experimentation in Poultry Husbandry in the United States."

The material for this address had been under preparation for some time and a large number of interesting facts had been collected. Professor Rice brought out the relations existing between Instruction and Experimentation, and the value of Poultry Husbandry in different states and in the Union as a whole. He further compared these relations both specifically, as to particular states, and as general averages, with the relations existing in other branches of Animal Industry. And it was found, as a result of these investigations, that considering its value and importance, Poultry Husbandry is less taught and less experimented with than any of the other branches of the general subject.

* * *

The winter-course Poultry students are certainly showing what kind of collegians they can make. They have formed an association and have inaugurated a yell typical of their work, which is said to make one pine for scrambled eggs and fried chicken.

* * *

The last two assemblies have been most successful and very well attended. On December 6 the short-course students were welcomed with an interesting and enjoyable program arranged by the hostesses, Mesdames Bailey, Warren, Whetzel, Van Au-

ken and Miss McCloskey, who were assisted by Messrs. Cleeves, Davis, Gilkey and Earle.

The next assembly was held on Jan. 3 and considering its proximity to the vacation, the attendance was exceedingly good. The agricultural glee club, which is now well on its way toward a successful career, rendered several selections. Dean Bailey gave a most interesting description of the farming methods of Mr. Henry Fairfax, who is showing that one can be very prosperous upon a "real" farm in Virginia.

This was the "bachelor hosts' " evening and a very enjoyable supper was served under the auspices of several of the instructing staff of the college.

* * *

The annual meeting of the New York State Breeders' Association was held at Syracuse on December 17 and 18. The meeting consisted of addresses by various prominent breeders besides the usual business transactions Professor T. L. Lyon of the Experimental Agronomy Department was one of the lecturers, having as his subject, "Breeding Forage Crops."

At this time the Holstein-Friesian Breeders' Club, the State Shropshire Breeders' Association and other affiliated organizations held meetings, thus giving an opportunity for members of the several associations to attend the meetings of two or more.

* * *

On Tuesday evening, December 18, the meeting of the Agricultural Association was made rather brief in order to make room for a mass meeting on the subject of the Honor System. The principal business before the association was the presenting of the prizes won in the Inter-college Cross-country Race of Dec. 15. The prize winners were H. C. Young, S. P., M. C. Burritt, '08, W. H. Arnold, Sp., W. H. Clark, Sp., and R. W. Hitchcock, '10.

The mass meeting was then begun and given over to the committee which had formulated the system. After a lengthy and thorough discussion the System as it had been drawn up was approved of by a majority vote and a number proceeded to sign the articles. A canvass for signatures remained necessary, as the approval in this form of the majority of the Agricultural students was necessary before the System went into effect.

* * *

On Friday, Jan. 11, those interested in the formation of a traveling summer school of Agriculture, as was contemplated last year, met in the Countryman office to discuss the possibilities of a trip this coming summer. A number of students have signified their wish to undertake such a trip, and as a good deal in the way of preparation was done by Professor Hunt last spring, it is possible that with a sufficiently large registration, the projected trip may be put through.

* * *

The Agricultural Extension Work has been revived and under the direction of two student committees has begun the practice of making trips to nearby villages—the practice which became successful and very popular among the farmers last year. Already two or three meetings have been held at Hayt's Chapel, Bethel Grove School-house, etc., and others are being arranged for continually. All students interested in this movement are welcomed by the committee at these meetings as are offers of short talks upon topics of interest to the farmers.

FORMER STUDENTS

'94, B. S. A., '01 M. S. A.—Harry Hayward was born May 19, 1869. He attended Mt. Hermon school for boys under the direction of Dwight L. Moody at Northfield, Mass., graduating from there in 1890. The following fall he entered Cornell. For original work in dairying and animal husbandry he was made a member of Sigma Xi. While in Cornell he was quite prominent in college activities.

Prof. Hayward is one of those men who made a splendid success in practical farming after leaving Cornell, and was induced to leave that part

for a teacher's post. In this he has succeeded as admirably as before.

On graduation he assumed the management of a large estate in Indiana, but only remained for a half year, resigning in order to take up the management of the big Colburn farms of 1000 acres at Delaware City, Del. He stayed here a year and then went to the Pennsylvania State College as Professor of Dairy Husbandry. From here he received the appointment of Professor of Animal Husbandry at

HARRY HAYWARD

New Hampshire Agricultural College at Durham. He remained in Durham for six years, but left it to become assistant chief of the Dairy Division at Washington in 1903.

Mt. Hermon started an agricultural department and one of its boys, Mr. Hayward, was chosen as director. Here he had charge of the land which he knew so well, and little dreamed that he would be back there with such a responsibility. He remained there until recently when he was appointed director of the Delaware Experiment Station at Newark.

'94, B. S. A.—Mr. C. S. Moore is now living on his extensive farm a few miles out from Montreal, Can. Profs. R. A. Pearson, H. Hayward and Mr. Moore were the only three men in Agriculture who graduated in '94.

'98, M. S. A.—James E. Higgins is now the Horticulturist of the Experiment Station in Hawaii. He has just recently returned from California, Oregon, and Washington in connection with certain shipping and packing experiments of tropical fruits from Hawaii. Among the fruits were aspapaias, avocalos, and the finer varieties of bananas. The experiments were very successful and it has been found to be profitable to market some of the tropical fruits of Hawaii on our western coast. The markets offered there were also under observation.

'01, B. S. A.—A. G. Ruggles is now the assistant state entomologist of Minnesota with headquarters at St. Anthony's Park, Minn.

'02, Special.—N. C. Dunlap of Nebraska is now a manager of one of the largest and most successful ranches in the west. Success for Dec. has a very complete account of the ranch.

'04, B. S. A.—A. C. Morgan was married in December to Miss Stella Thayer of Brooklyn, N. Y. They will pass the winter in Florida and will then go to Dallas, Texas, which is the headquarters of the Bureau of Boll-weevil Investigation of which Mr. Morgan is a member.

Ex.-'05, (for Ph. D.)—Nathaniel Schmitz, who is the expert in charge of Alfalfa Investigations at Washington, has several hundred co-operative experiments, being conducted in New York, Virginia, Delaware, North Carolina, and the New England States. Mr. Schmitz has been asked to give a series of lectures on alfalfa before the agricultural students at the Maryland Agricultural College. In February he will go to North and South Carolina.

'05, Special.—R. L. Meeker was a visitor here in December. He is now at Lake Kushaqua, N. Y., where he is in charge of the poultry and swine departments of Stony Wold Sanitarium.

Ex.-'05, (for Ph. D.)—Prof. T. C. Johnson, who has been the head of the Horticultural department at the West Virginia Station, has been transferred to the head of the Botanical department of the same station.

'05, Special.—T. H. Cardoza is the author of Bulletin No. 9 of the Experiment Station at Tuskegee, Ala., on "The San Jose Scale in Alabama."

'06, B. S. A.—L. I. Libby was in Ithaca in January for a short visit. He is now the manager of a certified milk farm at Cleveland, N. Y.

'06, Special.—Charles Taber Perkins was married to Miss Harriett Mae Whittlesey of Union Springs, N. Y., at the latter place on New Year's Day.

'06, W. P.—W. G. Krum, who has become manager of a large estate at Watertown, N. Y., sent the following letter to The Countryman, which is indicative of the true Cornell spirit,

Watertown, N. Y.

Editor Cornell Countryman:

Dear Sir:

Although far from our Alma Mater out in the busy world, with many cares and responsibilities, Cornell is seldom out of my mind and I will never forget the many happy hours or the many pleasant associations of the three months' short-course of 1906. To me this will be one of the brightest spots along life's pathway. It seems as though one could never forget the sound of the chimes, the hearty fellowship of the students, the personal interest of the professors for each one of us, and their untiring efforts to do each one of us all the good they could in the short time we were there, and they are still showing an interest in our welfare even after we have left Cornell.

I hope to reap a bountiful harvest from the seeds of practical knowledge sown in my mind by a body of men whose unselfish devotion to the advancement of the young farmers of this country with a better knowledge of practical up-to-date methods is worthy of the best equipment this State can possibly furnish, and I hope the day is not far distant when the College of Agriculture, especially the poultry department, may be so equipped that those in charge may not be hampered in their efforts to furnish us with the fruits of their years of labor and reseach.

I find here a great demand for educated farmers at wages much better than those paid good mechanics in the city. While some of the farmers' sons are still looking for gold mines in the cities, yet many good city business men are buying farms in order to engage in a business that is not all "grind," where they are not everybody's servant, where the income is not all used up by the expenses, where the air they breathe is not all dust and smoke, but where life is worth living "Close to Nature."

This class of men who have been progressive, up-to-date in their professional or merchantile career, are looking to the College of Agriculture, and to the Cornell graduates for instruction that they may manage their farms in a scientific business-like manner.

Since leaving Cornell in April, I have been very busy building up a large poultry plant, combined with fruit growing and dairying. I am endeavoring to install as far as possible, the plans and systems as taught at Cornell and am more than pleased with the results.

My work here has attracted the attention of many of the more enterprising farmers and poultrymen to such an extent that they are copying many of the methods, and as they see their practicability and great improvement over their older systems, their interest is greatly increased in the Cornell College of Agriculture. Several are looking to Cornell to furnish men to superintend large farms, some are talking of sending their sons to Cornell, while others are sending for the Cornell bulletins and reading courses.

I am pleased to see in this section as in other parts of the state, the large number of men who are awakening to a knowledge of what the College of Agriculture is doing for the farmers and farmers' sons. The "Cornell Countryman" is always a welcome visitor here and I congratulate you on your success in producing a paper that is of personal interest to every agricultural student and graduate."

Sincerely W. G. KRUM.

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The Winters Farm

SMITHBORO, N. Y.

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A SNOWY NIGHT